UNISYS

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Capabilities Manual

Relative to Release
Level Mark 3.7.0

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Printed in U S America
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OVERVIEW OF COMS

The Communications Management System (COMS) is a Message Control System (MCS) developed by Unisys Corporation to control on-line environments on the A Series and B 5900, B 6900, and B 7900 systems. It is a member of the InterPro (tm)* (Interactive Productivity) Series of software. COMS supports the processing of multiprogram transactions as well as single-station and multistation remote files. The advanced modular design of COMS makes it a flexible and highly efficient system that handles high-volume transaction throughput.

COMS is available in three versions: COMS (Kernel), COMS (Entry), and COMS. COMS (Kernel) is available to all A Series users and allows you to execute existing applications from predefined windows. COMS (Entry) and COMS can be purchased separately, and they allow you to develop a program environment, known as a window, that is made up of a single program or multiple programs. The following are just a few of the benefits that the COMS (Entry) and COMS versions provide:

EASY OPERATION	Both versions allow you to have multiple program environments (windows) running simultaneously from a single station.
EASY USER INTERFACE	Both versions allow you to define and maintain the COMS configuration file dynamically by using a menu- or command-driven method. This file contains the characteristics of the COMS environment. In addition, COMS input and output headers provide a simple interface with application programs written in ALGOL, COBOL74, Pascal, and RPG.
HIGH EFFICIENCY	Both versions allow you to develop a COMS environment that has low overhead, efficient processing, and high throughput rates by integrating portions of COMS with the Master Control Program (MCP), and allowing you to select only the COMS modules that your site needs.
FLEXIBILITY	Both versions allow you to create new functions for your installation to meet your site's particular needs.

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ADAPTABILITY	Both versions allow you to access multiple large system hosts and/or to attach to another station by providing an interface to the CP2000 data communications processor and by providing an automatic dial-out feature.

The full-featured version of COMS includes these additional capabilities:

DATA BASE RECOVERY	COMS automatically resubmits transactions to a Data Management System II (DMSII) data base or a Semantic Information Manager (SIM) data base after a transaction-state abort, a system crash, or a rollback. Additionally, you can request the recovery of all messages waiting to be processed.
TRANSACTION ROUTING	COMS allows you to route messages by using transaction codes and applying special processing to all or some of the transactions.
EFFICIENCY MONITORING	COMS allows you to monitor the efficiency of your COMS environment.
MIGRATION AIDS	COMS allows you to migrate easily from the Generalized Message Control System (GEMCOS) to COMS.

Migrating from COMS (Entry) to COMS requires no changes to the COMS environment; it simply expands your capabilities.

COMS FEATURES

COMS (Entry) and COMS use current software technology to efficiently perform such MCS functions as network control, access and process control, message routing, and error handling. Both versions are easy to use and maintain, and allow you to create functions that accommodate the specific needs of your site.

Both versions of COMS provide the following features:

WINDOWS

This feature allows you to have multiple program environments running simultaneously from a single station. For example, you can have an application that functions in another MCS environment, an application developed as a remote-file program, and an application developed for the COMS environment, all operating at the same time. You can view and communicate with one environment at a time while the others continue to run.

An access to a program environment within a window is called a "dialog" or "window dialog." COMS enables you to have up to eight dialogs within any given window. Each dialog constitutes an independent session with a program environment. The combination of windows and window dialogs allows you to access many program environments from a single station.

Predefined Windows

The Menu-Assisted Resource Control (MARC) window allows you to operate your system by using a menu-driven interface. The MARC window is always available in COMS.

The COMS Utility window allows you to define and modify the specifications of the COMS configuration file.

The CANDE window allows you to use Command AND Edit (CANDE), if CANDE is installed on your system.

The GEMCOS window allows you to use GEMCOS, if GEMCOS is installed on your system.

User-Defined Windows

As a COMS user, you can develop your own program environments. Developing these environments includes defining the characteristics of the window in the COMS configuration file and writing one or more programs to handle the processing of messages.

Types of Windows

Direct windows are predefined by COMS, or are defined by you through the COMS Utility window. The MARC window and an accounts payable application window developed for the COMS environment are examples of direct windows.

Message Control System (MCS) windows are predefined by COMS, or are defined by you through the COMS Utility window. The CANDE window and your own MCS window are examples of MCS windows.

Remote-file windows allow you to run remote-file programs directly without initiation by other programs. You can either define these programs to COMS or access them without defining them to COMS.

COMS UTILITY WINDOW

This window enables you to establish or reconfigure the COMS environment without bringing down the system. The requested changes are made to the COMS configuration file, a central repository of information about the COMS environment. The COMS Utility allows you to enter the changes by using menus or by entering commands.

Following is an example of the Window Activity menu of the COMS Utility. You can use this menu to define each window in the COMS environment.

```
        W - WINDOW ACTIVITY                                          COMS
Action: [                                                             ]
        CReate  MOdify  INquire  DElete  GO  HOme      (Press SPCFY for help)
        SEarch  FIrst   LAst     NExt    PRevious  DUmp
Window Name . . . . . . . . . [                ]
Maximum Users                 [0   ]
Maximum Dialogs . . . . . . . [1]
Maximum Trancode Size         [0 ]
Virtual Terminal Name . . . . [LSCANDE         ]
Remote-File Window (Y/N)      [N]
   Remote-File Program . . . . [                ]
MCS Window (Y/N)              [N]
   Truncated Results (Y/N) . . [N]
   Hostname                   [                ]
   MCS Title . . . . . . . . . [
                                                                      ]
Notify Open Activity (Y/N) . . [N]
   Notification Text           [                                     ]
Notify On Activity (Y/N) . . . [N]
   Notification Text           [                                     ]
Dialog Priority . . . . . . . [1]
Installation Data Name        [NONE            ]
```

Window Activity Menu

COMS UTILITY WINDOW (cont.)

The COMS Utility gives you the flexibility to add special processing functions that can be applied at any point during transaction processing. Because this utility is dynamic, you can easily use it to test new or modified modules by routing messages from selected stations to a destination before integrating the modules into the system.

You can limit the use of the COMS Utility to a specific person, a group of people, a station, or a group of stations, or any combination of these restrictions.

COMS OPERATION

An authorized user can perform a variety of functions by using the on-line COMS commands. These commands can be initiated by selecting the commands from a MARC window menu, or by entering the commands from any window accessible to the user in the COMS environment.

Any authorized user can control the following tasks:

- Starting or ending a session.
- Sending messages to other stations or the Operator Display Terminal (ODT).
- Moving from one window dialog to another.
- Entering text for another window dialog.
- Determining what windows are available to the user.
- Determining what programs are running in a specific window.

In addition, a control-capable operator or a user at a control-capable station can use COMS commands for the following tasks:

- Controlling the COMS network.
- Controlling transaction trails.
- Retrieving information about the COMS environment.

SECURITY

COMS allows you to restrict who can use the COMS Utility, who can use the control-capable COMS commands, who can access what COMS windows, and who can use what stations. In addition, the full-featured version of COMS allows you to restrict who can enter a given trancode.

DYNAMIC PROGRAM CONTROL

This feature allows you to control application programs within a direct window without bringing down the COMS system. You can control how many copies of the program can be running at one time, when a copy of the program is to be executed or terminated, and how many words can be in the input queue before additional words are tanked (stored temporarily) to disk.

FLEXIBILITY

The modular design of COMS makes it flexible and highly efficient. This flexibility allows you to select features and add special processing for the needs of your site.

COMS allows you to route messages by using an agenda. Any agenda can have independently defined pieces of code, called processing items, associated with it. With COMS you have the additional flexibility of being able to use an agenda and its processing items before a message reaches a direct-window program (preprocessing) or after leaving a direct-window program (postprocessing).

The combination of processing items and agendas allows you to develop a customized COMS environment that has flexibility now and in the future.

CP2000 INTERFACE

COMS allows you to use a CP2000 data communications processor, which allows you to easily connect terminals to multiple large-system hosts. Thus, if one large-system host goes down, you can switch quickly to another running large-system host.

Another advantage of the CP2000 is that it assumes tasks normally handled by the mainframe, such as routing and station error processing. As a result, the throughput of the mainframe is improved.

AUTOMATIC DIAL-OUT CAPABILITY

This feature allows an application developed for the COMS environment to programmatically connect a station to the system. With this capability you can help control remote-station access to the COMS environment.

The full-featured version of COMS also provides the following features:

TRANSACTION ROUTING

COMS allows you to develop applications that determine the route of the message based on the transaction code (trancode) present in the message. This routing is based on the agenda associated with each trancode. Additionally, you can control the usercodes or stations that can use a given trancode.

DATA BASE RECOVERY

If you are updating a DMSII or SIM data base, you can let COMS manage a transaction trail that is automatically synchronized with the DMSII or SIM audit trail when a transaction-state abort, system crash, or rollback has occurred. During recovery, COMS reapplies the transactions to the data base in the same order in which they were originally submitted and reinstates all messages that have been saved by the protected input queue feature. While recovery of a data base is in progress, all programs within the COMS environment that do not access that data base can proceed normally.

To support recovery, direct-window programs must include specific recovery routines.

STATISTICS WINDOW

This window allows you to monitor the COMS environment. You can receive reports on-line or print them out. The available information includes

- How much processor time is consumed by each copy of a program.
- How long a copy of a program has been in the mix.
- How many messages are waiting for a given program.
- What the average response time is for a program.

MIGRATING FROM GEMCOS TO COMS

The COMS Transaction Control Language (TCL) Formatter Processing Item allows GEMCOS message formatting and paging to be used in the COMS environment.

COMS ARCHITECTURE

The concept of libraries was used to develop modular processing for COMS. The COMS libraries contain a set of procedures that can be accessed individually by other programs. COMS relegates mainstream message-control activities to a series of hierarchical libraries, thereby lowering the amount of process initiation. Most COMS functions are performed within library procedures that run on top of the calling program's stack or on top of Data Communications Controller (DCC) stacks. Low-volume auxiliary functions are performed in active COMS stacks. This lowering of process initiation contributes to the high efficiency of COMS.

The basic architectural design elements of the full-featured version of COMS follow:

COMS CONFIGURATION FILE	The COMS configuration file contains descriptions that define all the entities related to COMS, such as usercodes, stations, windows, programs, agendas, and processing items. When COMS is installed, tables are built for the predefined entities and elements. After those tables are built, you can define and maintain your own application in the configuration file by using the COMS Utility.
COMS LIBRARY	This library contains the COMS object code, as well as service-function procedures that allow an application program to obtain information from the configuration file. The COMS library also supports changes to the configuration-file tables while COMS is running. Furthermore, this library contains the dynamic selection procedures for linking callers to the Router library, the Transaction Processor (TP) library, a Data Base (DB) library, or the Agenda Processor library.
ROUTER LIBRARY	This internal COMS library contains procedures called by the Master Control Program (MCP). The input-router procedure is used by the DDC for processing all input-message and output-message results associated with any COMS-controlled stations. The output-router procedure is used by logical I/O when handling output from remote-file programs.

DATA BASE CONTROL AND COMS CONTROL

The Data Base (DB) Control program and COMS Control library perform auxiliary asynchronous functions. Every defined data base has a separate DB Control that ensures there is a reliable, active stack available when application programs access the data base. COMS Control ensures the same stack availability for application programs that do not access a data base. Additionally, DB Control and COMS Control monitor the state of COMS, such as running or not-running. Finally, COMS Control runs and controls application programs, and controls slow routing functions, such as trancode errors, security errors, data-communications errors, and logging.

DATA BASE LIBRARIES AND TRANSACTION-PROCESSOR LIBRARY

A Data Base (DB) library provides two basic functions: support for the user program interface by using the Data Communications Interface (DCI) library interface mechanism, and support for recovery of a DMSII or SIM data base.

Programs that use the DCI library but do not require the data base functions provided by the DB library maintain the same relationship with the TP library as data base programs maintain with their DB library. Program control and queue implementation are the same for all application programs.

COMS INPUT/OUTPUT HANDLER

COMS minimizes disk I/O operations, which improves performance. When an operator requests that data from a specific window be stopped, COMS writes the output messages to disk (this is called tanking). When the window is allowed to send data again, COMS reads the messages from disk and sends them to the appropriate station. The COMS I/O Handler handles the I/O completions on behalf of COMS Control, DB Control, user application programs, and the Router library.

AGENDA PROCESSOR LIBRARY

This library calls procedures in Processing-Item libraries. It is called from the DB libraries, the TP library, or COMS Control. The Agenda Processor library executes the processing items that pertain to given agendas. Dynamic library selection from the COMS library is used to link the DB libraries, the TP library, and COMS Control to the Agenda Processor library.

DATA BASE TRANSACTION TRAILS AND COMS TRANSACTION TRAIL

A transaction trail for a data base is a file, generated by a DB library, that contains a series of time-ordered transactions that can be reapplied to the data base. COMS reapplies the transactions to provide synchronized recovery of the data base in the event of a transaction state abort, system crash, or rollback. The file optionally provides a journal of query transactions associated with the data base and provides statistical information on a transaction-by-transaction basis, which you can use for security and accounting purposes. Each DB library generates its own transaction trail.

A COMS transaction trail is a file, generated by the TP library, that reflects such information as beginning of jobs and end of jobs. The file optionally provides a journal of query transactions not associated with any data base and provides statistical information on a transaction-by-transaction basis, which you can use for security and accounting purposes.

HARDWARE AND SOFTWARE REQUIREMENTS FOR COMS

The hardware required to run COMS is one of the following:

- An A Series or B 5900, B 6900, or B 7900 system

The following Unisys A Series software is required to run COMS:

- Level 3.7 System Software
- Your version of Level 3.7 COMS Software

COMS PUBLICATIONS

The following publications describe the various aspects of COMS in detail:

- ALGOL Programming Reference Manual, Volume 2: Product Interfaces, form number 1170099.
- COBOL ANSI-74 Programming Reference Manual, Volume 2: Product Interfaces, form number 1180619.
- Communications Management System (COMS) Configuration Guide, form number 1185238.
- Communications Management System (COMS) Migration Guide, form number 1185204.
- Communications Management System (COMS) Operations Guide, form number 1154523.
- Communications Management System (COMS) Programming Guide, form number 1185303.
- Pascal Programming Reference Manual, Volume 2: Product Interfaces, form number 1170107.
- Report Program Generator (RPG) Programming Reference Manual, Volume 2: Product Interfaces, form number 1170115.

SUMMARY

The use of modules, front-end processors, agendas, libraries, windows, menus, a utility for on-line system definition and maintenance, and a statistics-gathering mechanism contribute largely to making COMS an easy-to-use system that is flexible and highly efficient. COMS is designed to satisfy both present and future MCS needs.